

## ABSTRACT

A surface-micromachined fluid-ejection apparatus is disclosed which utilizes a piston to provide for the ejection of jets or drops of a fluid (e.g. for ink-jet printing). The piston, which is located at least partially inside a fluid reservoir, is moveable into a cylindrical fluid-ejection chamber connected to the reservoir by a microelectromechanical (MEM) actuator which is located outside the reservoir. In this way, the reservoir and fluid-ejection chamber can be maintained as electric-field-free regions thereby allowing the apparatus to be used with fluids that are electrically conductive or which may react or break down in the presence of a high electric field. The MEM actuator can comprise either an electrostatic actuator or a thermal actuator.